

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph [Para 101] with the following amended paragraph:

[Para 101] As previously mentioned, functional hydrogel structures are created in situ through a technique called microprototyping. This technique provides not only the ability to create structures of custom geometry but also provides the ability to embed colloidal particles within the matrix. This powerful technique allows the fabrication of structures such as the exemplary rotor pump 94 shown in Fig. 9, in which the rotor vanes 96A-D that rotate about hub 97, terminate in colloidal particles 98A-D. Correspondingly, other colloidal particles 100 are embedded in the microchannel walls. Given that the vertical spacing within the microchannel is comparable to the particle diameter, these complementary particles repel each other when a perpendicular electric field is applied, as previously discussed. As the particles are repelled, the rotor, which can spin freely upon a center post that is anchored to the microchannel, is actuated to pump a microfluidic flow between input and output ports 102A, 102B. By patterning discrete electrodes (not shown) over each particle, individual fields can be turned on and off over appropriate particles as the rotor spins past them, thus perpetuating the rotor motion. By moderating the field, particle spacing or the frequency of field application, the velocity and direction of the rotor can be readily controlled. Fluid conveyance devices such as the rotor described here are appropriate for application in devices in which the precise delivery of suspended solids is required.